Optimizing esthetics for implant restorations in the anterior maxilla: anatomic and surgical considerations.


Abstract

The placement of dental implants in the anterior maxilla is a challenge for clinicians because of patients' exacting esthetic demands and difficult pre-existing anatomy. This article presents anatomic and surgical considerations for these demanding indications for implant therapy. First, potential causes of esthetic implant failures are reviewed, discussing anatomic factors such as horizontal or vertical bone deficiencies and iatrogenic factors such as improper implant selection or the malpositioning of dental implants for an esthetic implant restoration. Furthermore, aspects of preoperative analysis are described in various clinical situations, followed by recommendations for the surgical procedures in single-tooth gaps and in extended edentulous spaces with multiple missing teeth. An ideal implant position in all 3 dimensions is required. These mesiodistal, apicocoronal, and orofacial dimensions are well described, defining "comfort" and "danger" zones for proper implant position in the anterior maxilla. During surgery, the emphasis is on proper implant selection to avoid oversized implants, careful and low-trauma soft tissue handling, and implant placement in a proper position using either a periodontal probe or a prefabricated surgical guide. If missing, the facial bone wall is augmented using a proper surgical technique, such as guided bone regeneration with barrier membranes and appropriate bone grafts and/or bone substitutes. Finally, precise wound closure using a submerged or a semi-submerged healing modality is recommended. Following a healing period of between 6 and 12 weeks, a reopening procedure is recommended with a punch technique to initiate the restorative phase of therapy.
Outcome evaluation of early placed maxillary anterior single-tooth implants using objective esthetic criteria: a cross-sectional, retrospective study in 45 patients with a 2- to 4-year follow-up using pink and white esthetic scores.

Belser UC, Grütter L, Vailati F, Bornstein MM, Weber HP, Buser D.


Abstract

BACKGROUND:

To validate the concept of early implant placement for use in the esthetically sensitive anterior maxilla, clinical trials should ideally include objective esthetic criteria when assessing outcome parameters.

METHODS:

In this cross-sectional, retrospective 2- to 4-year study involving 45 patients treated with maxillary anterior single-tooth implants according to the concept of early implant placement, a novel comprehensive index, comprising pink esthetic score and white esthetic score (PES/WES; the highest possible combined score is 20), was applied for the objective esthetic outcome assessment of anterior single-tooth implants.

RESULTS:

All 45 anterior maxillary single-tooth implants fulfilled strict success criteria for dental implants with regard to osseointegration, including the absence of peri-implant radiolucency, implant mobility, suppuration, and pain. The mean total PES/WES was 14.7 +/- 1.18 (range: 11 to 18). The mean total PES of 7.8 +/- 0.88 (range: 6 to 9) documents favorable overall peri-implant soft tissue conditions. The two PES variables facial mucosa curvature (1.9 +/- 0.29) and facial mucosa level (1.8 +/- 0.42) had the highest mean values, whereas the combination variable root convexity/soft tissue color and texture (1.2 +/- 0.53) proved to be the most difficult to fully satisfy. Mean scores were 1.6 +/- 0.5 for the mesial papilla and 1.3 +/- 0.5 for the distal papilla. A mean value of 6.9 +/- 1.47 (range: 4 to 10) was calculated for WES.

CONCLUSIONS:

This study demonstrated that anterior maxillary single-tooth replacement, according to the concept of early implant placement, is a successful and predictable treatment modality, in general, and from an esthetic point of view, in particular. The suitability of the PES/WES index for the objective outcome assessment of the esthetic dimension of anterior single-tooth implants was confirmed. However, prospective clinical trials are needed to further validate and refine this index.